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(54) Title: GENETIC COMPUTING USING COMBINATORIAL TRANSCRIPTION CONTROL

(57) Abstract: A scheme is provided for selecting the regulatory DNA sequences to exert combinatorial control of gene transcription in vivo by multiple regulatory proteins, i.e., transcription factors (TFs). The method provides the ability to implement a wide range of complex logic functions through the manipulation of the regulatory DNA sequences, typically several hundred bases in length. The method includes procedures for selecting the strengths of the binding sites of different TFs and their relative positioning in order to implement a plurality of different logic functions.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/38995

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12P 21/02; C12N 1/00, 5/02, 15/63
 US CL : 435/69.1, 375, 455

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 U.S. : 435/69.1, 375, 455

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,814,618 (BUJARD ET AL) 29 September 1998 (29.09.1998), see entire document.	1-7, 11-17, 21-24
Y		8-10, 18-20
Y	WO 94/12015 (CHUA ET AL) 09 June 1994 (09.06.1994), see entire document.	8-10, 18-20
Y	US 5,968,773 (HEDDLE ET AL) 19 October 1999 (19.10.1999), see entire document.	8-10, 18-20
Y	US 5,834,236 (LAMB ET AL) 10 November 1998 (10.11.1998), see entire document.	8-10, 18-20
Y	US 5,942,433 (VINSON ET AL) 24 August 1999 (24.08.1999), see entire document.	8-10, 18-20

Further documents are listed in the continuation of Box C.

See patent family annex.

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"&"	document member of the same patent family

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INTERNATIONAL SEARCH REPORT

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Continuation of B. FIELDS SEARCHED Item 3:

EAST (USPAT, PGPUB, EPO, JPO, Derwent databases), Dialog OneSearch (biotech databases)
search terms: operator sequence, cis, element?, regulat?, silencer?, enhancer?, genetic, comput?, overlap?, artificial, engineer?, chimer?, and, or, nand, xor, gate?, logic, function?, dna binding